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GROUND ELEMENTS
COMMAND, CONTROL & COMMUNICATIONS PROJECT

SMC SERVER
PROCUREMENT SPECIFICATION

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REVISION AND HISTORY PAGE

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Release	-	-	Approved and Released per E-Signature Routing completed 05/20/09	06/01/09
	A	1	Added spec for the power cord (Section 2.2.5)	03/19/10

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SPECIFICATION FOR THE LCS

SMC SERVER

1. GENERAL

1.1 SMC SERVER Description

The System Monitoring and Control HWCI provides the ability to configure each of the LCS sets, control the hardware that makes up the sets, and monitor the current condition of all hardware in the sets.

SMC provides three essential functions:

- Monitor the health and status of LCS software, hardware and interfaces.
- Control operations of LCS software, hardware and interfaces.
- Provision and configure LCS software, hardware and interfaces.

It is currently specified to be a small to mid-level class server executing a Solaris SPARC based operating system.

The SMC Server is not a safety Critical Item.

1.2 Purpose of This Document

This specification establishes the general characteristics, performance and design requirements of the SMC SERVER. This specification also defines the deliverable documentation requirements and delivery preparation, packaging, and shipping requirements.

1.3 Requirements Weighting Definitions for This Document

Specific meanings have been assigned to the words “shall”, “should”, and “will” as follows:

- “Shall” indicates a requirement to provide a function. “Shall” indicates that the requirement is mandatory and will be the subject of specific compliance verification for acceptance.
- “Should” indicates a desired goal for which there is no objective test. “Should” indicates that the product will attempt to achieve the desired goal to the maximum extent feasible while still remaining cost effective. This should not be at the expense of mandatory requirements. Statements using “should” may be subject to specific acceptance testing, but only to qualitatively assess the level of achievement of the goal against a specific defined set of test criteria.

- "Will" indicates a statement of fact or provides information and is not subject to any acceptance testing. Statements using "will" must not, by definition, refer to a goal or a requirement.

1.4 Vendor Assurance

a. The SERVER warranty requirements shall be as follows:

(1) The Vendor shall furnish factory warranties against defects in materials and/or workmanship on the SERVER supplied.

(2) The warranties shall be 5 years after final acceptance of the SERVER.

(3) Failures will be repaired or replaced by the vendor with an on-site service representative for warranty repair work.

(4) On site repairs will be completed within the Next Business Day from the time of the service call. Repairs will be done on 8x5 Monday through Friday with 24x7 telephone support.

(5) Disk drives that fail shall be retained by the customer.

b. If available without additional cost, the vendor should provide certification documentation such as ISO9001SAE, AS9100B, ISO 9001 and/or SAE AS9003, Inspection and Test Quality System for Hardware.

1.5 Deliverable Documentation

The Vendor shall deliver all required SERVER documentation to KSC concurrent with the SERVER delivery, as described below.

1.5.1 Operations and Maintenance (O&M) Manuals

a. The Vendor shall provide One (1) set of Operations & Maintenance (O&M) documentation.

b. All documentation shall be in the English language.

c. The Vendor shall provide O&M documentation, in the form of printed manuals and/or PDF files and customarily supplied data, consisting of the following as a minimum:

1) SERVER general description, including basic features, characteristics, and specifications that describe the general physical and functional makeup and operation of the SERVER.

2) Interfacing data, including connector information.

3) A complete set of instructions for administrative functions, including block diagrams and pictorial diagrams.

4) Operating instructions that contain a full and detailed step-by-step procedure to accomplish any setup or operation the unit is required to perform, without making any assumptions (for example, about pre-existing conditions), and diagnostic processes, preventive maintenance, and troubleshooting procedures.

d. Any additional documentation that the vendor can make available to provide insight into the workings of the SERVER, either in hard copy or soft copy format, would be desired by the Government.

e. The Vendor shall provide a written right of transfer to NASA and the rights to reproduce by NASA (and its designated vendor representatives) for inclusion in on-site maintenance documentation.

1.5.2 Acceptance Testing Data Package

The Vendor shall provide a **Certificate of Compliance** (COC) for this specification package.

1.6 Software Revisions

a. The Vendor shall provide all server software on DVD/CD media in reproducible form with licensing information included.

b. The Vendor shall provide firmware or driver upgrades or revisions within the warranty period at no additional cost.

1.7 Maintenance

The useful life of SERVER shall be at least 5 years with normal servicing and replacement of parts, during which time all requirements contained in the specification shall be met.

2. SERVER REQUIREMENTS

2.1 Environmental Requirements

2.1.1 Operating Environment

a. The SERVER shall operate within a relative humidity range of 20% to 80%, non-condensing.

b. The SERVER shall be designed to operate in an air conditioned environment with the ambient room temperatures between 15.56° C (60° F) to 26.67° C (+80° F) with extremes of uncontrolled temperatures between 11.11° C (52° F) and 35° C (95° F) for one (1) hour.

2.1.2 Non -Operating Environment

a. SERVER shall be designed to be stored within an ambient temperatures of -17° C (0° F) to 49° C (120° F).

b. SERVER shall be designed to be stored within a relative humidity range of 10% to 80%, non-condensing.

2.2 Design and Construction Requirements

The design and construction requirements presented in this section address the general SERVER design requirements. These requirements are imposed on the design of the system to maximize safety, reliability, commonality, maintainability, and usability. The design requirements and criteria specified in this section are applicable for the SERVER.

2.2.1 Reliability, Maintainability, Availability (RMA) Requirements

The SERVER shall be designed and constructed to operate for 24 hours a day, 7 days a week, and 365 days a year.

2.2.2 Underwriters Laboratory Certifications & Approval

a. The SERVER shall be compliant with either Underwriters Laboratory Specifications or the International Equipment Consortium (IEC) Specifications for product safety.

b. The Vendor shall provide shall provide the results of UL or IEC compliance testing upon request.

2.2.3 Safety Requirements

a. Any exposed electrical contacts shall be clearly marked and shielded to prevent accidental contact.

b. Safety covers shall be non-conductive if there is insufficient metering or adjustment clearances.

c. The SERVER shall be designed with receptacles “hot” and plugs “cold”.

d. The thermal design of workstations and SERVER shall preclude surface temperatures exceeding 45° C (113° F).

f. SERVER provided shall meet specified limits in FCC Rules and Regulations for class A and B unless noted below.

2.2.4 Electromagnetic Interference

The SERVER shall be compliant with FCC Class A or Class B specifications for electromagnetic emissions.

2.2.5 Operating Supply Voltage

a. The SERVER shall operate normally within the ranges of 200 VAC to 240 VAC and 57HZ to 63Hz
b. The SERVER shall have a power cord with an IEC60320 C14 plug.

2.3 Platform Specifications

This section defines the specifications for the SMC SERVER. These definitions describe the specific performance and system configuration for the SMC SERVER.

2.3.1.1 CPU Performance/Capacity Requirements

a. The SERVER shall provide a minimum of 4 processor Cores.
b. The SERVER shall provide a minimum 1.0 GHz Ultra SPARC T1 processor.
c. The SERVER shall provide a minimum SPARC V9 architecture processor.

2.3.1.2 Memory/RAM Performance/Capacity Requirements

The SERVER shall provide a minimum of 8GB ECC RAM expandable to a minimum of 32GB ECC RAM.

2.3.1.3 Software Tools and applications

The SERVER shall provide and support the 64bit version of Solaris SPARC 10 or later as a native host operating system.

2.3.1.4 Disk Drive Performance/Capacity Requirements

a. The SERVER shall have a minimum of four disk drives: two are configured as Primary and two are configured as secondary.

b. Each hard drive shall have a minimum capacity of 250GB

c. The hard drives shall be in a RAID 1 configuration.

d. The hard drives shall have a SATA II interface or better.

e. The hard drives shall have a speed of 10K RPM or faster.

f. The hard drives shall be hot-pluggable.

2.3.1.5 Graphics Card Specifications

The SERVER shall provide a video adapter.

2.3.1.6 Network Interface Requirements

a. The SERVER shall provide a minimum of eight 1GB twisted pair Ethernet interface ports.

b. The SERVER shall support IPv4.

c. The SERVER shall support IPv6.

2.3.1.7 USB Interface Requirements

The SERVER shall provide a minimum of 4 USB 2.0 ports or better.

2.3.1.8 CD/DVD Requirements

The SERVER shall provide an internal DVD +-RW/CD +-RW drive that can read and write dual layer media.

2.3.1.9 Display Requirements

The SERVER shall provide Sun compatible rack mounted keyboard and monitor.

2.3.1.10 Power Supply Requirements

The SERVER shall provide a single-fault-tolerant power supply system.

2.3.1.11 Physical Requirements

a. The SERVER shall be rack mountable in a 48.28 cm (19 inch) rack.

b. The SERVER shall be a maximum of 81.28 cm (32 inches) deep.

c. The SERVER shall come with rack mountable rails.

2.3.1.12 Power-On Self-Test Requirements

The SERVER shall provide POST (Power-On Self-Test).

3. PREPARATION FOR DELIVERY

The Vendor shall be responsible for preservation, packaging, and packing the SERVER and associated deliverable documentation, marking packages and containers, and shipping them to KSC.

3.1 Packing

a. SERVER, software, and deliverable documentation shall be packed in shipping containers which ensure acceptance by common carrier and safe delivery at destination.

b. Shipping containers shall comply with the Department of Transportation (DOT) common carrier rules and regulations as applicable to the mode of transportation.

3.2 Marking

Shipping containers shall be marked “Attention: NASA Launch Control System (LCS) Server” in one-inch or larger lettering.

4. ABREVIATIONS AND ACRONYMS

CD Compact Disk

CMM Capability Maturity Model

CMMI Capability Maturity Model Integration

CoC Certificate of Compliance

COTS Commercial Off The Shelf

CPU Central Processing Unit

DOT Department of Transportation

DVD Digital Video Disk

ECC Error Correction Code

FCC Federal Communications Commission

FSB Front Side Bus

Gb/S Gigabits per second

GB Giga Bytes

GHz Gigahertz (billions of cycles per second)

HWCI Hardware Configuration Item

HZ Hertz (cycles/second)

IEC International Equipment Consortium

IPv4 Internet Protocol Version 4

Ipv6 Internet Protocol Version 6

ISO International Standards Organization

KSC John F. Kennedy Space Center

LCS	Launch Control system
MHz	Megahertz (millions of cycles per second)
NASA	National Aeronautics and Space Administration
O&M	Operations and Maintenance
PDF	Portable Document Format
POST	Power-On Self Test
RAID	Redundant Arrays of Independent Disks
RAM	Random Access Memory
RMA	Reliability, Maintainability, Availability
RPM	Revolutions per Minute
RW	Read Write
SATA	Serial Advanced Technology Attachment
UL	Underwriter's Laboratory
USB	Universal Serial Bus
VAC	Volts Alternating Current